Business Plan

2017–2018

Department of Energy

NOVA SCOTIA

© Crown copyright, Province of Nova Scotia, 2017

Budget 2017–2018: Business Plans

ISBN: 978-1-55457-735-4

NOVA SCOTIA

Table of Contents

Message from the Minister 2

Departmental Content 4

- Departmental Mandate 4
  - Electricity Plan Implementation 4
  - Offshore Growth Strategy 5
  - Continued Assessment of Onshore Oil and Gas Growth Potential 5
  - Promote and Support Development of Tidal Energy 6
- Core Functions 6
  - Joint Management of Offshore Petroleum Resources 7
  - Onshore Oil and Gas Regulation/Administration 7
  - Liquefied Natural Gas (LNG) 7
  - Industry and Supply Chain Development 7
  - Fiscal Management – Oil and Gas Royalties 8
  - Sustainable and Renewable Energy Policy 8
  - Engagement and Consultation 12
  - Energy Education and Training 12
  - Additional Information 13

Financial Summary 15

Message from the Minister

This is an exciting time for Nova Scotia's energy sector. It's a time of change, and a time of opportunity. We are taking an innovative approach to moving to cleaner energy sources in an affordable way, while leveraging opportunities for economic growth. The key is to find the right balance. Over the next 12 months, the Department of Energy will work hard to put new ideas into action so we can make the most of our resource potential.

The offshore continues to represent a significant economic growth opportunity for our province. We've taken the initiative to invest in geoscience, and shared the results openly with industry. The result has been more than $2 billion in work commitments from major global players. In the year ahead, we will continue to add to our understanding of the oil and gas resource potential lying off our coast.

At the same time, we know we must become more efficient in how we use carbon in our economy. Over the last decade, no province has reduced its Greenhouse Gas (GHG) emissions as much as Nova Scotia. We have already reached the federal government's 2030 target having reduced our total emissions by almost 30 percent from 2005 levels. To achieve this, we added wind-power to our electricity mix, and reduced our electrical load faster than any other Canadian province. We also continue to develop the enormous potential of tidal energy. Tidal energy is an economic driver in rural communities, an expertise-builder, and a reliable renewable energy source.

Our innovative investments in cleaner energy are reflected in our climate change agreement with the federal government. Over the next year, we will be working on a made in Nova Scotia cap and trade program that balances affordability with continued progress on reducing emissions.

In 2017-18, the Department of Energy will continue to work to improve Nova Scotia's electricity system. Ratepayers were clear when they told us they wanted stable and predictable power rates. With rate stability to 2020, that's exactly what they are getting. In addition, Nova Scotia Power is now held to performance standards for customer service, reliability and storm response. Over the next year, we will continue to work with our partners in Atlantic Canada to strengthen our regional electricity grid.

There are many more milestones ahead. We will expand and extend energy efficiency programs to reach more Nova Scotians. Later this year, we will launch the Solar for Community Buildings Pilot Program to help communities, academic institutions, and non-profit groups reduce their energy costs by producing their own solar electricity. We will continue the Connect2 program to invest in active transportation options in all corners of the province. Plus, the new Smart Energy Innovation Program will support local businesses developing innovative sustainable energy solutions.

2017-18 promises to be another busy year for the Department of Energy as we work to grow our energy economy and create opportunities for Nova Scotians. We encourage you to read our complete business plan.

Yours very truly,

Original signed by

Michel P. Samson

Minister of Energy

Departmental Content

Departmental Mandate

As per the Public Service Act, the Department of Energy's mandate is to manage and promote energy resources to achieve optimum economic, social and environmental value from the energy sector. The 2015 Ministerial Mandate Letter outlines that achievement of the mandate is to include the following actions:

1. Implement the Electricity Plan to achieve consumer rate stability through improved competition, innovation, and accountability.
2. Continue work on the Offshore Growth Strategy.
3. Carry on with assessment of onshore oil and gas growth potential.
4. Promote and support development of tidal energy.

Electricity Plan Implementation

The Electricity Plan translates the energy priorities of Nova Scotians into strategies and actions that will deliver rate stability, cleaner energy, and more choice. Achieving that vision requires a more accountable and transparent regulatory system and innovative ways to manage and store renewable energy sources. The electricity plan supports Nova Scotia's continued leadership in Greenhouse Gas Reduction.

Nova Scotia's electricity plan has successfully:

- Made power rates more stable and predictable
- Provided for more accountability and a regulatory system that is easier to understand
- Supported technology and innovation in Nova Scotia
- Allowed for more competition in electricity generation

In 2017-18, the Department will continue to implement the changes unveiled in the Electricity Plan, including funding for innovative projects to advance Nova Scotia's ability to test, monitor and learn in the following areas:

- Solar for Community Buildings PV Pilot Program – will promote installation of solar panels on community buildings and allow groups to generate their own electricity.
- Electricity Innovation Pilot Program – will award funding, on a competitive basis, to research projects focused on energy storage and new ways of managing electricity use. It will also provide support for tidal energy development.

- Enhanced Net Metering Program - offers more certainty on modest investments by homeowners, businesses and institutions who wish to supply their own needs and sell surplus power from their renewable sources.

Offshore Growth Strategy

The Offshore Growth Strategy is a four-year initiative to generate new insight about our offshore petroleum geology, attract new investment to our province, and ready our offshore regime and local supply chain to be prepared for increased offshore oil and gas activity.

Our geoscience research builds on momentum from the 2011 Play Fairway Analysis (PFA). The PFA was instrumental in attracting $2 billion in exploration work commitments in 2011 and 2012, and more recently resulted in attracting another new player, Statoil, to our offshore with $82 million in new exploration commitments. This research improves the understanding of Nova Scotia's complex petroleum geology to remove some of the geological uncertainty associated with exploration.

If exploration efforts lead to new commercial development of oil and gas in the offshore, royalties, crown share payments, and employment and contract opportunities would translate into significant economic benefit to the province.

In addition to geoscience efforts, the Offshore Growth Strategy includes initiatives to optimize economic benefit opportunities from offshore development. This includes undertaking supply chain capacity development work, positioning local companies and workers for offshore opportunities, and leveraging joint venture partnerships. Our capacity assessment work involves generating a new understanding about the potential opportunities that may result from deep-water exploration in the areas of engineering, manufacturing, fabrication, and supply and service.

Increasing interest and activity in the offshore may require additional government investment in local capacity building and/or geoscience work to maximize the opportunities for the province. The Department will assess this opportunity in the coming months.

Continued Assessment of Onshore Oil and Gas Growth Potential

Work continues to complete the Onshore Atlas, a two-year initiative to improve our geoscience knowledge of our onshore. The Atlas will improve data accessibility, usability and glean new insight from our current onshore geology data sources. The data and findings from this research will be available to industry and others with an interest in our onshore petroleum resources. As new information becomes available, the Onshore Atlas will be amended and expanded to address gaps in the geoscience not captured in the initial documents.

Promote and Support Development of Tidal Energy

Nova Scotia is well positioned to benefit from an emerging global industry – marine renewable energy. Marine renewables represent a significant opportunity for Nova Scotia to capitalize on its world class tidal energy resource in the Bay of Fundy. Growing Nova Scotia's capacity for tidal energy will support the achievement of climate change goals and reducing carbon emissions. Nova Scotia currently hosts one of the world's largest grid-connected in-stream tidal turbines in the Bay of Fundy. This achievement was based on innovation in research and development, supply chain development, and leveraging our significant expertise in ocean technology.

Nova Scotia continues to partner with the Offshore Energy Research Association (OERA), the Fundy Ocean Research Center for Energy (FORCE), Marine Renewables Canada (MRC), and other groups to support innovative research and demonstration projects. Funding and promoting advancements in technology, research, and data collection are critical to understanding the environmental, social, and economic impacts of tidal energy development.

The Department is committed to developing Nova Scotia's tidal energy resources in a manner that is environmentally sustainable and benefits Nova Scotians. In 2017-2018, it is anticipated that the *Marine Renewable Energy Act* will be proclaimed and regulations enacted to provide a clear, efficient path forward for the industry. Legislation will set out the requirements for public consultation processes, licensing and permitting systems, and government oversight with respect to the development of marine renewable energy resources, including in-stream tidal, wave, tidal range, ocean current, and offshore wind.

Core Functions

In addition to the activities outlined in the mandate, Energy's core services/functions consist of the following:

1. Joint Management of Offshore Petroleum Resources
2. Onshore Oil and Gas Regulation/Administration
3. Liquefied Natural Gas (LNG)
4. Industry and Supply Chain Development
5. Fiscal Management – Oil and Gas Royalties
6. Sustainable and Renewable Energy Policy
7. Engagement and Consultation
8. Energy Education and Training

Joint Management of Offshore Petroleum Resources

Offshore oil and gas activity is jointly managed by the Province of Nova Scotia and the Government of Canada through legislation, regulation, and policy. The Department of Energy works with Natural Resources Canada and the Canada-Nova Scotia Offshore Petroleum Board to ensure that the exploration and development of Nova Scotia's offshore oil and gas resources are responsibly managed.

Work is continuing on the modernization of offshore regulations to ensure that we maintain rigorous standards for safety, environmental protection and management of resources. Work is also underway to ensure our companies are competitive and the offshore continues to contribute to the growth of the provincial economy.

Onshore Oil and Gas Regulation/Administration

The Nova Scotia Department of Energy administers onshore petroleum rights as set out in the Petroleum Resources Act and Regulations. In 2017-2018, in addition to continuing to build the Onshore Atlas, work will continue to modernize onshore oil and gas regulation to ensure that we are enhancing our regulatory regime and that industry continues to use best practices, particularly as new technologies continue to be developed.

Liquefied Natural Gas (LNG)

Given the potential for economic benefits, the Department is supporting emerging opportunities related to LNG export and investment in Nova Scotia.

While the Department does not control major factors impacting industry decisions (e.g. international markets, access to gas supply, expansion and construction of pipelines), a LNG project or projects could increase investment in the offshore and result in significant construction and long-term employment and contracting. Work will continue to examine the economics of additional gas development and exploration opportunities for natural gas prospects offshore. This analysis will be presented and discussed with investors, purchasers, pipeline companies, and gas suppliers.

Industry and Supply Chain Development

Recognizing that the energy sector is an important driver of economic activity in the province, the Department strives to optimize private sector business opportunities for Nova Scotian firms in the energy sector: oil and gas, marine renewables, and sustainable and renewable energy. Benefits are seen through local employment, expenditures for goods and services, building expertise and capacity in the supply chain to competitively capture international projects, and

differentiating Nova Scotian product and service offerings through the commercialization of research. The Department gathers market intelligence and engages with project developers/operators to understand global supply chain opportunities, and works to build capacity among businesses to ensure they are well informed, able to respond to and compete for contracts, and leverage opportunities to build relationships with potential clients, partners and suppliers.

The scale of success can be considerable. Overall expenditures in the province for oil and gas exploration and development are typically hundreds of millions of dollars each year, with thousands of Nova Scotians employed. Offshore petroleum activity is expected to grow, resulting in significant opportunity. Tidal energy research and development allows Nova Scotia to develop its unique tidal energy potential and enhance its existing ocean technology expertise. Research indicates that significant goods and services can be procured locally for NS tidal projects, and for export. Tidal energy is an emerging sector on a global scale, which positions the Nova Scotia supply chain as a potential leader in the global marine renewable energy sector. The Department is working with industry to foster growth and build capacity in our supply chain to support success locally and globally.

Fiscal Management – Oil and Gas Royalties

The Department is responsible for monitoring energy projects to ensure appropriate economic benefits are collected from the development of offshore petroleum resources. The administration and auditing of oil and gas royalties and Crown Share Adjustment payments contributes millions of dollars directly to the provincial treasury. The Department ensures the province's royalty regime reflects modern best practice and strikes a balance between attracting investment and providing a fair return to Nova Scotians.

While offshore revenues are not currently experiencing growth, offshore activities still provide fiscal benefits to the province. In 2015-2016 the province reported $14.1 million in royalties. Since 2000, over $1.9 billion offshore royalties have been received.

Sustainable and Renewable Energy Policy

Energy Efficiency Policy and Programming

The Department funds non-electric (e.g. furnace oil, wood, propane or natural gas) energy efficiency programs, delivered by Efficiency Nova Scotia. To ensure that assistance in reducing energy costs is provided to those who need it most, the HomeWarming program was designed specifically for low income Nova Scotians. The HomeWarming program will be continued this year with an expanded portfolio which includes funding for affordable rental units and buildings of non-profit agencies who provide services to low income individuals.

Efficiency Nova Scotia will also be assisting the Department in design and delivery of a program which provides full efficiency upgrades for homes on Nova Scotia First Nations. A key component of this program will be training provided for members of First Nations communities on clean energy and energy efficiency.

Provincial funding also supports pilot programs to determine how to implement efficiency programing at a lower long-term cost while improving their effectiveness, such as Property Assessed Clean Energy (PACE) financing for municipalities and the promotion of energy efficiency through real estate transactions, among others.

In addition to program funding, the Department also supports energy efficiency policy development. The Department in collaboration with the Building Code Coordinator, plans to work with other provinces and the federal government to develop an Energy Efficiency Buildings Strategy which will set out a multi-year path for significant changes to the building code. The Department will also work on a home energy products market transformation strategy which will support the Energy Efficiency Buildings Strategy.

The Department will support the green buildings sector through funding for energy benchmarking workshops and promotion of LEED/PassiveHouse case studies. It will also work to promote the electrification of the heating and transportation sectors.

Clean Energy and Climate Change

Some key actions taken to date, or that are under development, by the Department under the Pan-Canadian Framework on Clean Growth and Climate Change include:

- Nova Scotia's Renewable Electricity Regulation

  The Department of Energy will work in collaboration with the Nova Scotia Department of Environment to implement a hard cap on GHG emissions from the electricity sector through the Greenhouse Gas Emissions Regulations. Nova Scotia was able to achieve the new renewable energy standard for the electricity sector of 25% of electricity to be sourced from renewable energy by 2015. We will continue work in this area in order to meet the new goal of 40% by 2020.

- Energy Efficiency

  Nova Scotia has Canada's first energy efficiency utility, Efficiency One. This independent organization has achieved an annual reduction in electricity demand of over 1% since its creation. It also administers comprehensive energy efficiency programs for low income and the Mi'kmaq of Nova Scotia. These efforts reduce GHG emissions while supporting the growth of a low carbon economy.

- Tidal Energy

  The Bay of Fundy and Minas Basin are home to the highest tides in the world. Every day, more water flows into this bay than the output from all the rivers in the world combined. Nova Scotia supports the development of these tides as a source of clean, predictable and reliable energy for Nova Scotians and as a clean technology export. The Fundy Ocean Research Centre for Energy (FORCE) now has a grid connected 2MW tidal turbine with plans to install more in the coming years.

- Action on pricing carbon pollution

  As part of the pan-Canadian benchmark for carbon pricing, Nova Scotia has committed to implement a cap and trade program in the province that builds on our early action of greenhouse gas emission reductions in the electricity sector.

- Collaboration partnership opportunities for clean growth and climate change

  The Government of Nova Scotia and the Government of Canada intend to collaborate in the following priority domains to address climate change and advance clean growth:

  Energy Efficiency

  Nova Scotia and the Government of Canada are committed to partnering to enhance the existing provincial energy efficiency programs for homes and businesses with the objective of reducing energy use and saving energy costs. This could include expanded energy efficiency programs, efforts to accelerate the electrification of homes and businesses through heat pumps and smart meters, district energy systems, and electric vehicle infrastructure.

  Renewable Energy Generation, Transmission and Storage

  Nova Scotia, in partnership with the Government of Canada, will work together to advance opportunities for renewable energy generated from sources such as wind, tidal and solar, as well as the enabling transmission and storage infrastructure to ensure growth beyond current technical limits. Research and development capacity will continue to be strengthened.

  Regional Electricity Grid Connections

  Nova Scotia will work with the other Atlantic provinces and the Government of Canada to advance opportunities for clean electricity generation, transmission, storage and demand management linkages across the region.

  This will:
  - improve access to non-emitting electricity;
  - support the phase-out of coal-fired electricity generation;

- improve grid reliability and energy security; and
- consistent with fair market principles, help provinces access export markets for clean, non-emitting electricity.

This will contribute to the Atlantic Growth Strategy and Canadian Energy Strategy, and will build on existing regional coordination efforts, leading to an integrated regional electricity strategy.

Sustainable Transportation

The Department of Energy leads an inter-departmental partnership to continue to implement the province's sustainable transportation strategy "Choose How You Move". This work covers five main areas: active transportation, public and community transit, land-use planning, vehicle and fleet efficiency, and community engagement.

The Department of Energy created and delivered a new grant program "Connect2" as an innovative approach to advance active transportation connections. Connect2 is based on a vision that all trips under two kilometers to key community destinations in rural and urban areas of Nova Scotia could be made using sustainable modes of transportation. The program seeks to support collaborative, innovative, and locally-based solutions to improving connectivity in rural and urban communities across Nova Scotia (e.g. hospitals, universities, schools, and business districts).

Choose How You Move priorities include:

- Managing the Connect2 grant program;
- Encouraging sustainable transportation behavior by initiating, supporting, and promoting various programs;
- Support for development of the Blue Route, a provincial bicycle network;
- Support for collecting data on sustainable transportation indicators;
- Improving government's internal practices around sustainable transportation with a focus on the inclusion of active transportation considerations in land use planning; and
- Partnering with Municipal Affairs on the completion of the Statement of Provincial Interest on healthy communities.

Promote and Support Development of Tidal Energy

Our commitment to the development of tidal energy plays a key role in our climate change and clean growth plans. More detail can be found under our Department Mandate, on page 4.

Engagement and Consultation

If we are to see the energy sector grow, mature, and bring sustainable economic benefits and energy diversity to our province, we must work with Nova Scotians to build trust in our regulatory systems and resource management oversight. Public engagement and consultation is an essential part of this process, and is necessary for the success of all types of energy developments.

The Department of Energy is fully committed to consulting and working collaboratively with the Mi'kmaq of Nova Scotia in the development of the energy sector. The Department will continue to improve its relationship with the Mi'kmaq of Nova Scotia, fulfill and integrate the duty to consult in decision making processes, and support Mi'kmaq participation in the energy sector.

Energy Education and Training

Pengrowth-Nova Scotia Energy Scholarship Program

The Pengrowth-Nova Scotia Energy Scholarship Program offers funding to trades and technology, and university undergraduate and Master-level students throughout Nova Scotia to pursue energy-related studies. Since its inception, the program has supported more than 200 students and researchers with more than $1 million in funding. By providing scholarships to students pursuing energy-related studies at both universities and the Nova Scotia Community College, the Pengrowth-Nova Scotia Energy Scholarship Program helps students develop the skills and knowledge they need to become leaders in the energy sector.

Energy Training Program

The Energy Training Program develops the energy workforce in Nova Scotia by encouraging private sector employers to hire post-secondary students for career-related work terms. The program offers a wage subsidy for a term employment to employers hiring students and new graduates from Nova Scotia universities and community colleges. Employers benefit from a proven, cost-effective way to enhance short-term productivity and develop long-term recruiting solutions. Post-secondary students and recent graduates contribute to the energy industry while gaining valuable skills and experience that will enable them to become part of a highly skilled workforce in the energy sector.

Additional Information

Collaboration/partnerships with other areas of government and/or agencies outside of government:

1) Pan-Canadian Framework:

   The Pan-Canadian Framework on Clean Growth and Climate Change is the Government of Canada's plan – developed with the provinces and territories and in consultation with Indigenous peoples – to meet emissions reduction targets and grow the economy. The plan includes a pan-Canadian approach to pricing carbon pollution, and measures to achieve reductions across all sectors of the economy. It also aims to drive innovation and growth – increase technology development and adoption to ensure Canadian businesses are competitive in the global low-carbon economy.

2) Nova Scotia Federal-Provincial One Window Committee on Tidal Energy:

   The Province of Nova Scotia established the Federal/Provincial One Window Committee on Tidal Energy to streamline and better coordinate the regulatory review of tidal energy project proposals in Nova Scotia waters.

3) Regional Electricity Cooperation and Strategic Infrastructure Initiative:

   The Department has engaged with regional government and utility partners, as well as the Federal Government, in the Regional Electricity Cooperation and Strategic Infrastructure Initiative. This project aims to identify the electricity infrastructure that would best assist Atlantic Canada in its transition to a sustainable energy future.

4) Frontier and Offshore Regulatory Renewal Initiative (FORRI):

   The Department of Energy is active in the Frontier and Offshore Regulatory Renewal Initiative (FORRI) which aims to modernize the regulatory framework governing oil and gas activities in Canada's frontier and offshore oil and gas areas. It is a partnership of federal and provincial government departments and includes participation of the Boards responsible for the regulation of frontier and offshore oil and gas activities.

Participation in larger government initiatives:

1) Public Participation

   Energy will continue its collaboration with resource departments on public participation activities.

2) Youth Employment

   Energy continues to support the government's Youth Initiative by incorporating youth internship positions within every division of the department.

3) China Strategy

Energy's strategic alignment with China includes collaboration with Chinese developers and supply chain companies on Offshore and Marine Renewable Energy projects.

Financial Summary

Departmental Expenses Summary
($ thousands)

Programs and Services	2016-2017 Estimate	2016-2017 Forecast	2017-2018 Estimate
Office of the Minister / Deputy Minister	404	389	401
Administrative Services	1,614	1,490	1,326
Sustainable & Renewable Energy	2,345	2,413	2,368
Business Development & Corporate Services	2,899	2,887	3,171
Petroleum Resources	4,852	4,792	3,713
Canada-Nova Scotia Offshore Petroleum Board	4,488	4,488	4,355
Energy Efficiency, Sustainable Transportation & Conservation Grants	12,995	20,538	13,670
Total - Departmental Expenses	29,597	36,997	29,004
Ordinary Recoveries	3,096	4,249	3,914
Funded Staff (# of FTEs)			
Department Funded Staff	56.5	52.7	58.2

Note:

1) Forecast Variance: A variance of $7.4 million from our initial annual forecast was incurred following government's additional allocation of funding for energy efficiency programming.

For Ordinary Revenues, see Estimates and Supplementary Detail Book, Chapter 2
For TCA Purchase Requirements, see Estimates and Supplementary Detail Book, Chapter 1